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THE MEDICAL VS. THE SURGICAL TREATMENT OF GASTRIC ULCER.[1]

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THE last word concerning the treatment of gastric ulcer has not and cannot be said, because, although individuals with large experience may give reasonably mature conclusions, the cases reported are meagre, particularly as to the after-history. The medical and the surgical reports are equally culpable. The latter may be excused because operative procedures have been instituted so recently that the after-history is not of value. Technique and operatve mortality have concerned the surgeon chiefly. Indeed, the former has so recently been fixed upon with any uniformity that the essential end results cannot be calculated. Fortunately, the time is approaching when definite conclusions can be drawn.

The difficulties attendant upon a solution of the best methods for the treatment of gastric ulcer are great. The uncertainty of its clinical course renders statistics concerning therapy most confusing and often unreliable. It is often present without symptoms; its most active manifestations may be followed by a period of quiescence; it may recur at varying intervals; it may remain a mild disease, large groups being attended by minimum mortality; or it may be a grave affection, vicious to the extreme.[2] There is, or may be, ever present, that general nervous state or nutritional fault which precedes, attends, and therefore invites recurrence of ulcer.

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[1] An address delivered at the Seventh Triennial Congress of American Physicians and Surgeons, Washington, D. C., May 7, 8, and 9, 1907.

[2] A physician of large experience in hospital and private practice, writes that he has never seen a death from gastric ulcer and never sent a patient to a surgeon. His experience of gastric ulcer was not large, it is fair to say.

In a general way the methods of treatment are either medical or surgical. At least it has been forced on the minds of the profession that gastric ulcer must be considered either a medical or a surgical disease. This attitude is such that, notwithstanding the protests of good surgeons, cases are forced upon them for operation when it would be unjustifiable to operate.

To combat this notion it seems necessary to assume that there are two forms of treatment; to demonstrate if possible their relative values; to show that each has a field and also in which field the respective methods apply. In one sense no comparison can be made. Gastric ulcer has two phases: one of simple course, the other with complications. These are the divisions held to in this paper—simple ulcer and ulcer with complications. The simple and the complicated phase have an entirely different clinical expression, although both are liable to the accidents of hemorrhage and perforation. The former, barring accidents, we hope to show, is a medical, the latter a surgical, affection.

Any form of successful treatment should lower the mortality of the disease, should aim to cure it so thoroughly that, as far as can be said, the ulcer is healed and that danger of relapse is not likely to occur, and that the patient is in as good condition relatively as before the onset of the affection. Any procedure which brings about such an ideal condition is of course the one to adopt. It is the purpose of the statistics which follow to show which form may more nearly attain this end. The problem is rendered difficult because the disease is not common and the experience of individual observers is small.

THE CRITERIA OF CURE. What constitutes a cure? The statistics of gastric ulcer show that most observers consider the disease cured when, after three or four weeks of treatment, the symptoms are relieved or removed. This is unfortunate. No value can be attached to cases reported in such manner. It is well known that at varying intervals after an alleged cure, perforation or hemorrhage may occur. To establish criteria on which to base a cure is difficult. It would seem that a lapse of two years without symptoms, that an approach at least to normal chemical conditions, and a removal of all abnormal physical or mechanical states are sufficient grounds to affirm that a cure has taken place in simple ulcer. To these some authorities would add the absence of occult blood from the stools for a long period. After a course of treatment by any means, notwithstanding these precautions, it is difficult to say that a cure has been obtained unless all the above conditions have been fulfilled.

THE ADVANTAGES OF MEDICAL TREATMENT. The two forms of treatment held out to us have advantages and disadvantages.

By the medical treatment the functional derangements, causal and secondary, are managed. It is conducted without doing violence to the body in any way, and if successful leaves the subject in as good condition as before.

THE DANGERS OF MEDICAL TREATMENT. A sense of false security is given, as the ulcer may be dormant and an accidental and fatal complication may arise when one is not prepared for it. The freedom from symptoms may flatter the patient that a cure has been established and induce carelessness in dietetics, hygiene, etc. Further, the healing of the ulcer, also possible under surgical treatment, may be attended by grave sequels of adhesions, contractions, or stenosis.

THE ADVANTAGES OF SURGICAL TREATMENT. By the surgical treatment, if indicated, the advantages of the medicinal treatment are secured. The operation is too often held to be the panacea, when success is really due to the after-cure. There is no reason why a patient who has undergone surgical treatment should not have an after-treatment like that which is given to cure the tendency to ulcer. The advantages depend upon the nature of the operation and the ability to deal with the complications. If the operation of excision is resorted to, the symptoms and accidents are prevented, providing, of course, there is only one ulcer. The gastro-enterostomy now in vogue is a procedure which while it relieves the many symptoms, does not warrant the belief that a cure is established. It is not proved that the ulcer has healed. Both perforation and hemorrhage occur after gastro-enterostomy. It is not known that relapse or recurrence is less frequent than in ulcers treated medically. The splendid statistics of Robson and of Mayo in their end-results compare favorably with, but are not better than, similar statistics of men who have treated similar groups of cases medically. The time element in the surgical cases is the unsettled factor. If the ulcer is excised, a dangerous and not practical procedure we are told, or destroyed by perforation, the only risk comes from persistence of the organic cause or the presence of two or more ulcers. In the second period of ulceration, when complications have arisen, the advantages are entirely in favor of surgery.

THE DANGERS OF SURGICAL TREATMENT. (1) The same as in the medical treatment unless excision of the ulcer, if solitary, is resorted to. (2) Operative death. (3) Death from complications. (4) Death or ill health from defects in metabolism. (5) The effect of the operation. The patient on whom an operation has been performed has the disadvantage of a psychic insult, the influence of which is not trifling, and of being in possession of new physical and physiological conditions the nature of which time alone can tell. It must be admitted that a patient who has undergone a grave surgical operation is not in as good condition to have that indefinable something, which may be termed neurosis, cured, as he who has not been submitted to such an insult.

The surgical dangers are constantly lessening. From an average operative mortality of 20 per cent. they have fallen to 1.5 to 2 per cent. for individual operators, and 10 per cent. for all. The tables will show a remarkable change born of experience in technique between the operative results of all prominent operators in their first and their latest series. Thus the vicious circle is rarely established and in the latest large group of cases of the Mayos, Moynihan, Robson, Deaver, and others it did not occur. Peptic jejunal ulcer is also a less frequent complication. (See Lyle and Joslin.)

Hunsheimer, Joslin, Rosenberg, Kreuger, and others have studied the effects of gastro-enterostomy on metabolism and on gastric secretion. The studies are not sufficient as to the metabolism, although most suggestive. More studies must be made also of the chemical secretions. Kreuzer's[3] are the most recent.

The after-effects of gastro-enterostomy are, he states: (1) Secretory function again assumes the normal condition. (2) Total acidity falls to the normal—sometimes below, but rises shortly to the normal. If the acidity was above normal before operation it sinks otherwise to normal. If acidity was diminished the usual rule is for it to reach normal or slightly above. (3) Free hydrochloric acid—usually lessened after operation. (4) In those cases in which no trace of hydrochloric acid is found, it is obtainable after the operation, the exception being to find it missing. A deficient hydrochloric acid cannot be considered a disadvantage, as it is only a result of increased emptying power of the stomach. (5) The backflow of bile into the stomach disappears gradually and does not seem to cause any pronounced symptoms. (6) Backflow of pancreatic juice is seldom recognizable. Complete blocking of the outflow seems to be more the result of the disease than of the operation.

Katzenstein studied the question experimentally and compels us to assume that the secretory, in addition to the motor, function is benefited by operation. Not only did he find that the backflow of bile and pancreatic juice lowered the acidity because of this alkalinity, but also that the delicate reflexes of the duodenum and jejunum were not lost, if the animal was fed on special foods, as fats.

The experimental evidence does not forbid surgical procedures, apparently.

A Study of Statistics. To one who has had the opportunity of studying only some sixty odd cases of gastric ulcer, the wisdom that comes from personal experience cannot be overwhelming. The study here presented is based, therefore, on an analysis of 1871 cases of gastric ulcer and 316 cases of duodenal ulcer collected from the accumulated literature since 1897.[4] The cases selected are those only which have been reported in full detail.

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[3] Effects of Gastro-enterostomy on the Chemical Functions of the Stomach, 1906.

The German and French cases[5] were tabulated in accordance with the following scheme: (1) Age. (2) Sex. (3) Hemorrhage. (4) Pain. (5) Vomiting. (6) Boas' tender points. (7) Acidity. (8) Feces. (9) Retention. (10) Duration of diseases. (11) Medical treatment. (12) Result. (13) Surgical treatment. (14) Result. (15) Length of period under observation after treatment. (16) Recurrence. (17) Remarks. (18) Observer.

The English and American cases, on the other hand, have been analyzed to determine the incidence of age and sex; the basis for diagnosis according to symptoms and gastric analyses; the occurrence of retention from simple dilatation, pyloric spasm, adhesions, hourglass contraction, or pyloric obstruction; the duration of the disease; the medical treatment, if any, and the result; the surgical treatment, if any, and the result; the duration of relief; and recurrence. The question of hyperacidity or hyperchlorhydria was, through an oversight, omitted. This is to be regretted, as the division of ulcers into those with secretory symptoms and those with motor symptoms should be clearly defined. Fortunately the answers to the various questions are such that in a general way this question has been satisfactorily met.

In addition a study of 586 cases has been made, based upon private communications received in reply to a letter to members of the Association of American Physicians which requested an anwser which would supply the above facts. I scarcely need say I am deeply indebted for the valuable contributions thus placed at my disposal.[6]

I have kept apart from my tables and used as control, for analysis and comparison, the unique and unparalleled experience of the Mayos and of Robson, Moynihan, Munro, v. Mikulicz, and many others, as well as of the distinguished gentlemen who took part in the discussions of the Royal Medical and Chirurgical Society in 1906. No papers on gastric ulcer can be written without drawing fully on the older writings and the not remote ones of Welch, Fenwick, Lebert, Dreschfeld, Brinton, and others.

To control the errors liable to occur in statistics, comparisons have also been made with the conclusions of the various able writers who have analyzed large groups of cases. The skilful analyses of Wier and Ford, Rodman, Patterson, Caird, Russell, Bramwell, Greenough and Joslin; of Lund, Joslin and Murphy; of Sears,

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[4] The cases of duodenal ulcer have been reserved for a future communication.

[5] Over 900 cures. Treatment only is analyzed in this communication.

[6] Since this has been written, valuable private communications with lists of cases have been sent me by Deaver and others. They will be embodied in an analysis to be published in the future.

Campbell Howard, Thompson, and others are invaluable. The German and French theses and the papers of Brunner, Kreuzer, Krönlein, Körte, v. Mikulicz, Minkowski, Blumensath, Spicker, Schneider, Becker, Ladevèze, and Rochard have also been excellent controls.

The well-founded objection that statistics which give the results of treatment are usually exaggerated, whether surgical or medical, because the tendency to omit failures is dominant, has been borne in mind. It does not appear, however, that there is any way of bringing together a large number of cases except by this means.

The statistics offered by the advocates of medical treatment do not fully prove their case. A better brief could have been made by them had the cases been reported in greater detail and especially, also, with more precise accounts of after-results. It must be said in this respect that the surgeons have their cases better in hand for continued observation. This has grown out of the necessity before them of continually proving the contention that their invasion of the sphere of medicine is warranted by results. The quarrel as to the respective merits of the medical and the surgical treatment of appendicitis would be in continuance had the surgeons not been able to marshal their facts to telling purpose. Then, too, the responsibility of taking the life of the patient in their hands adds to the necessity of scientific precision of knowledge instead of glittering generalities.

The study of statistics impresses one with the value of having a single guiding head and hand for each department of a hospital and of a liberal management which will employ such aid as can enable the staff properly to collect records and to keep in touch with patients after their discharge. An efficient medical secretary is as essential as a good nurse in any institution. Only by these means can fruitful observation be secured. Moreover, although it places another burden on the practitioner, if he wishes to attain knowledge that can be applied to his daily work, he must similarly keep in touch with patients after their discharge.

As previously intimated statistics are thus far not reliable, and can only admit of approximate conclusions because no established criteria have been formed for a basis of calculation. They are meagre because the patients are lost sight of. From the studies of the many cases in the literature I should say we need information of the end-results and the course of the disease during a period of ten years. We should agree upon what constitutes a "cure." All realize the difficulties, whether it is to base the result on the duration of relief of symptoms and the absence of physical sequels, or on the plan of Boas, to affirm a cure only when occult blood (in addition to the above) is absent from the stools.

The study has not been satisfactory, for the reasons above mentioned. It has been profitable because it has laid bare our deficiencies. Many points of interest, however, are brought out, and the province of the physician and the surgeon defined.

Some elementary facts obtained from a study of the statistics of gastric ulcer must be known in order to estimate the relative merits of remedial measures. We should have a clear notion of the frequency of gastric ulcer, of the mortality of the disease irrespective of treatment, and of the mortality following the surgical and the medical treatment of the affection.

THE FREQUENCY OF GASTRIC ULCER. The infrequency of gastric ulcer, as the following statistics will show, behooves us to pause before urging operative procedures for intractable indigestion, hematemesis, gastric pain, and other isolated symptoms on the ground that they are of ulcer origin. I am willing to admit that an exploratory operation in competent hands is attended by very little danger. If the surgeon wishes to coddle his mental powers by employing this means of diagnosis and the patient is willing to submit, nothing more need be said. Otherwise, gastric ulcer will not be considered a frequent surgical affection. This is surely the case in simple ulcer. It would be infrequent in complicated ulcer, if the simple ulcer were treated for a sufficiently long period of time.

FREQUENCY OF GASTRIC ULCER BASED ON AUTOPSIES.

Author.	Number of autopsies.	Number of gastric ulcers.	Per cent.
Welch (German statistics)	32,052	1522	5.00
Dietrich	10,103	350	3.40
Fenwick	47,912	2019	4.20
Harlow Brooks (Bellevue Hospital)	1,000	9	0.90
Pearce (Albany Hospital)	1,000	11	1.10
Welch (Bellevue Hospital)	800	6	0.75
Willigde	3,400	221	0.64
Howard (Hospitals of United States)	10,841	144	1.32
Francine (Philadelphia and Phipps)	2,937	41 (duod. & gastric)	0.13
German Hospital (A. O. J. Kelly)	937 (11 years)	13	0.13
Mallory (Boston City Hospital)	2,600	25	0.90
Warthin	200	7	0.35
Schneider (Munich)	1895–1899 4,535	89	1.92

Howard, in a valuable paper pointed out that the frequency of ulcer varies in different cities. Based on clinical returns he found the largest percentage of cases in Boston—1.28; the smallest number in Denver—0.12. The Boston statistics tallied well with the figures of Greenough and Joslin from the Massachusetts General Hospial, where a percentage of 1.74 was found. It is of interest to note that in Breslau and Zurich 0.66 per cent., London 0.78 per cent., Berlin 1.33 per cent., Edinburgh 2.2 per cent., are fair estimates of the clinical frequency of gastric ulcer. The percentage of frequency in America is greater than that in Germany and London. Edinburgh is higher than America or London.

FREQUENCY OF GASTRIC ULCER BASED ON CLINICAL OBSERVATION.

Author.	Number of cases.	Number of gastric cases.	Number of cases of ulcers.	Private practice.	Per cent.
Lebert	41,688	...	252	...	0.6400
Charité Hospital, Berlin, 1888–1898	42,219	...	555	...	1.3300
Howard*	(Med. adm.) 161,599	...	930	...	0.5700
Fenwick †	(Med. adm.), 45,712	...	383	...	0.8200
	Out-patients, 5,000	...	37	...	0.7400
Bramwell ‡	In-patients, 35,692	...	803	...	2.2000
	Out-patients, 7,665	...	76	...	0.0900
Medical service of Bellevue Hospital, Harlow Brooks	In 3 months, 6,205	...	3	...	0.0040
Berlin Charité	1903–04, 15,834	250	46	...	0.0022
	1904–05, 15 863	279	48	...	0.0030
Clayton §	1,869	108	8	...	0.0040
Elsner	1,000	171	14	Private.	1.5000
Ingers	2,105	550	7	Private.	0.0300
Lichty	6,870	1,269	103	Private.	1.4000
Friedenwald	13,794	...	287	Private.	2.0000
Sawyer	....	1,800	63	Private.	

* Hospitals of United States (15). † London and Temperance Hospitals. ‡ Edinburgh Royal Infirmary. § Garfield Hospital.

The variation in statistics in hospitals of the same city is due to the different class of patients admitted to the respective hospitals. It is well known that the death rate and frequency are higher in Guy's Hospital in London than in other hospitals, because of the poor class of patients admitted to the former.

In private communications received from physicians throughout the country the reports of the infrequency of gastric ulcer in the cities mentioned above is confirmed. It must not be forgotten, however, that different observers have different criteria upon which the diagnosis of ulcer is based. Thus Howard states that the disease is rare in Baltimore, whereas Friedenwald reports an unusually high percentage. Professor Baumgarten in St. Louis writes that it is very infrequent and that he has never had to send a case to a surgeon.

THE MORTALITY. The mortality of gastric ulcer varies with different observers, as the tables indicate.[7] Irrespective of the method of treatment the mortality of patients admitted to the hospital seems to be from 6 to 8 per cent., although Bulstrode places it as high as 18 per cent., Gilman Thompson at 20.5 per cent., and Körte and Herzfeld at 25.9 per cent. In private practice the mortality is much less, as the cases of Friedenwald, Lichty, and others show.

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[7] With a view to economy of space, many of the tables are omitted. Those especially interested in them will find them in detail in the Trans. Cong. Amer. Phys. and Surgeons, 1907, p. 56.

PERCENTAGES OF SIMPLE ULCER, SEQUELS, HEMORRHAGE, AND PERFORATION IN CASES COLLECTED FROM LITERATURE. Total number of cases 1871: Simple ulcer[8] 409 (21 per cent.); perforation, 536 (28.1 per cent.); hemorrhage,[9] 160 (8.01 per cent.); of sequels 766 (40.01 per cent.). The number of reported cases of simple ulcer included in the analysis is undoubtedly very small. As no special interest is attached to single cases treated medically, they are not reported. Moreover, the proportion of cases is not true. Thus, cases of perforation have been reported more frequently of late, to clear up questions of diagnosis and settle modes of surgical technique. The unpublished cases from private practice give a truer idea of the relations of the simple and the complicated ulcer and the frequency of the grave accidents in various forms:

PERCENTAGES OF SIMPLE ULCER, SEQUELS, HEMORRHAGE, AND PERFORATION IN UNPUBLISHED CASES. Total number of cases, 586. Simple ulcer, 194 (33.1 per cent.); hemorrhage (grave), 23 (3.9 per cent.); perforation, 16 (2.7 per cent.); sequels, 353 (60.2 per cent.).

SIMPLE ULCER. The results of the treatment of simple ulcer in cases collected from the literature is shown in the following table:

Simple uncomplicated ulcer.	409 cases				21.0 per cent.	
			Cure and improvement		76.0 "	
Male	143	34.9 p. c.	Unimproved		6.6 "	
Female	266	65.1 "	Death		17.3 "	
Immediate result.	Surgical treatment,		Cure	184	68.1 p. c.	73.2 p. c.
			Improved	41	5.1 "	
			Unimproved	18	6.6 "	26.6 p. c.
			Death	54	20.0 "	
Immediate result.	Medical,		Cure	102	73.3 "	81.2 p. c.
			Improved	11	7.9 "	
			Unimproved	9	6.4 "	18.4 p. c.
			Death	17	12.4 "	

The mortality is 17.3 per cent. It is seen that the advantage is in favor of medical treatment, as the immediate result from such treatment is attended by a mortality of 12.4 per cent., while by surgical treatment it is 20 per cent. We must admit, physician and surgeon alike, that simple uncomplicated ulcer is a medical disease.

This table does not include the statistics of Leube, Lichty, and many others. Hemorrhage and perforation cases are not included.

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[8] Without serious hemorrhage or sequels.

[9] Demanding treatment

Thus, Leube and Friedenwald have, and Bramwell, Schultz and Robinson estimate, a mortality below 6 per cent. Without doubt the excellent results attained in private practice are explained by the fact that the patients apply early for treatment, at once are placed on a proper dietary, and medical supervision is continued for a long time. It must be remembered that hospital patients, presumably the poorer classes, have more frequent complications and sequels and a higher mortality than private patients. This occurs because the former class cannot carry out treatment for a sufficiently long time, and, indeed, usually give it up as soon as symptoms are relieved.

The results of the treatment of simple ulcer in private practice are shown in the following table (unpublished cases):

Simple ulcer. Total number of cases	194	
Male	56	28.9 per cent.
Female	138	71.1 "

35 Surgical treatment	18.0 per ct.	Cure	85.70 per ct.	Unimp.	14.3 per ct.
159 Medical treatment	82.0 "	Cure	91.70 "	Unimp.	08.3 "

As to decade of surgical treatment, most cases between 20–30.

	48.5 per ct.	Men	29.49 per ct.	Women	70.6 per ct.
Of these cure	94.1 "	Men	29.40 "	Women	70.6 "
unimp.	05.9 "	Women	100.00 " (one case).		

As to decade of medical treatment most cases between 20–30.

	48.4 per ct.	Men	20.50 per ct.	Women	79.5 per ct.
Of these cure	91.0 "	Men	17.90 "	Women	82.1 "
unimp.	09.0 "	Men	28.50 "	Women	71.5 "

A closer analysis shows that of the 85.7 per cent. that were noted as cured by surgical treatment, 77.1 per cent. were reported as cured finally and 8.5 per cent. improved. Of the 14.3 per cent. unimproved, 11.4 per cent. died. 91.7 per cent. were reported as cured by medical means, of which 60.1 per cent. were cured absolutely and 32 per cent. improved. 5 per cent. of the unimproved remained ill and 3.1 per cent. died.

The death rate in simple uncomplicated ulcer treated surgically is higher (11.4 per cent.) than the death rate of cases treated medically (3.1 per cent.). It must be observed, however, that a larger number were reported "improved," after medical treatment, the end of which is not known, than after surgical treatment.

A study of the 270 cases of simple ulcer treated surgically shows that the patients came to the surgeon after the thirtieth year and the larger proportion in the decade from 40 to 50. Male subjects deferred treatment to a later period than females.

Cases are treated medically in the earlier decades. They are in all probability uncomplicated. The surgeon is brought to the complicated cases. Either one of two things is evident: cases are not sufficiently grave to undergo treatment, or medical treatment is not conducted as vigorously and over as long a period of time as is required to bring about a cure. It is more likely that the early symptoms were absent, mild, or overlooked and treatment was not needed until organic conditions developed. In private cases the surgical treatment was instituted with the same relative degree of frequency as the medical in the corresponding decades. The tables show that the reported or hospital patients (poorer classes) delay treatment and that the more severe cases go to the surgeon. In private practice there is not the same delay.

In simple ulcer the death rate under surgical treatment was 20 per cent., and under medical treatment 12.4 per cent. Privately reported cases showed a surgical mortality of 11.4 per cent. and a medical mortality of 3.1 per cent. It is not easy to compare these statistics with others, for in other analyses the mortality is given of both simple and complicated ulcer when not due to hemorrhage or perforation. The results of the medical treatment of peptic ulcer in the Boston City Hospital as reported by Sears showed a mortality of 21 per cent. Greenough and Joslin in a study of 187 cases, treated in the Massachusetts General Hospital, found the mortality was 8 per cent. It must be noted that only 40 per cent. of the 82 per cent. discharged cured or relieved remained well. The series which Shultz analyzed from the Breslau and New Hamburg Hospital gave a mortality of 5.4 per cent., or if unrelieved and died are added, 10.5 per cent. unimproved by treatment. Sears well points out that the longer cases are followed the higher the proportion of failures, rising at the end of five years to 50 per cent. Unfortunately neither surgical nor medical cases have been observed over the length of period that permits of definite conclusions. Gradually there comes to light more and more cases in which repeated operations were done, indicating failure by surgical as well as by medical means. Hewes reports a series of cases of simple ulcer which more nearly correspond to our groups. Of 51 cases immediate results with complete relief followed medical treatment in 48; failure in relief of symptoms, 2; died, 1. 49 of the 51 were followed for a period of two years with results as follows: 31, or 63 per cent., cured; 18, or 36 per cent., recurred; 1, or 2 per cent., died. The same class of cases treated surgically, 13 in number, resulted as follows: cured 6, or 46 per cent.; recurred or not relieved by operation 3, or 23 per cent.; died shortly after operation 4, or 30 per cent. A separation of the cases into the simple and complicated cases was not made in B. Robinson's cases (mortality 2.1 per cent.); in Bramwell's (mortality 6.2 per cent.); in Russel's (mortality 2.1 per cent.); and von Leube's (mortality 2.4 per cent.); all of which were treated medically. Had such been the case the mortality for the management of simple ulcer would have been less without doubt.

REMOTE RESULTS OF THE SURGICAL AND THE MEDICAL TREATMENT OF SIMPLE ULCER (LITERATURE).

	Simple Ulcer, Medical.				*Simple Ulcer, Surgical.*			
Period.	Cure.	Imp.	Unimp.	Death.	Cure.	Imp.	Unimp.	Death.
6 months	20	10	2	11	36	5	4	47
6–12 months	3	0	0	0	28	1	0	0
1–2 years	0	0	0	0	43	0	0	0
2–3 years	0	0	0	0	6	0	0	0
3–4 years	1	0	0	0	12	1	0	0
4–5 years	0	0	0	0	1	1	0	0
5 years	1	0	0	0	4	0	0	0
Not given	85	..	5	..	..	109	4	..

This table shows the result from six months to five years after treatment. It shows also the unsatisfactory state of the literature, inasmuch as end results are disregarded by surgeons and clinicians alike. Nevertheless, of 270 cases treated surgically, presumably cured, 47 were dead at the end of six months, while of the 139 treated medically 11 died in the first six months.

REMOTE RESULTS OF THE MEDICAL AND THE SURGICAL TREATMENT OF SIMPLE ULCER (UNPUBLISHED CASES).

	Medical.				*Surgical.*			
Period.	Cured.	Imp.	Unimp.	Death.	Cured.	Imp.	Unimp.	Death.
1–6 months	6	6	1	5	2	..	..	4
6–12 months	9	3	..	..	2	..	..	..
1–2 years	4	2	..	..	..	..	..	..
2–3 years	7	..	..	..	..	..	..	..
3–4 years	..	1	..	..	..	..	..	..
4–5 years	..	..	..	..	..	..	..	..
Over 5 years	1	..	..	..	..	..	..	..
Not given	58	36	6	..	18		..	..

Recurrence noted in 2 cases.

In addition to the foregoing the records show 35 cases apparently cured but followed by recurrences. Of these 29 showed benefit after further treatment. Of the cases treated medically recurrence was noted in 16 apparent cures. Although the period of observation was not given, all but 14 were observed for periods extending beyond six months.

The remote results of the treatment in simple gastric ulcer are determined with difficulty, inasmuch as most of the cases analyzed again are not divided into simple and complicated. Mayo Robson had followed patients for from one to five years and was able to find 96 out of 112 who had suffered from gastric ulcer, for whom he had operated, in good health. Unfortunately his cases are not classified as to sequels. The same may be said of the studies of Greenough and Joslin, Russel, Debove, Murdock, and others. It is proper to note that many insist that the remote results of ulcer (with and without complications) treated medically are most unsatisfactory—56 per cent. of the 55 per cent. who were discharged from the Massachusetts General Hospital (Greenough and Joslin) were dead or suffered from recurrence after the lapse of five years. Five hundred patients suffering from gastric ulcer were admitted to the London Hospital, 42 per cent. of whom had previous attacks. Bulstrode, who made the analyses, states that 82 per cent. were discharged, relieved or cured, but concludes, if the large percentage noted above had recurrences, similar recurrences must have occurred in the 82 per cent. It is Mayo Robson's conviction that 25 per cent. of all cases of ulcer of the stomach treated medically succumb to the disease or its complications. Unfortunately, again we are without the divisions of the simple and the complicated ulcer. Debove and Remond estimate the mortality at 50 per cent.

In this connection the careful analysis of Russel of the results of the treatment of 47 patients (no division) should be given: after a lapse of from two to thirteen years, the direct mortality amounted to 2.1 per cent.; 42.6 per cent. ended in recovery; 4.3 per cent. died from intercurrent disease; 6.4 per cent. could not be classified; and 44.7 per cent. were suffering from stomach symptoms. Hawkins, in a study of 536 cases, admitted to St. Thomas' Hospital, found the mortality 13.3 per cent., of which 0.9 per cent. died of hemorrhage, 8.5 per cent. of general, and 1.9 per cent. of local peritonitis. Adhesions and pyloric stenosis caused the death of 1.9 per cent. Patterson reports 99 cases cured; 9 result fairly good, and 8 unsatisfactory (4 died and 4 relapse) in 116 gastro-enterostomies, after a lapse of eighteen months to nineteen years. Again there is no statement of the sequels, as in the following list treated medically, which in 72 cases resulted in 19 cures, 2 probable cures, 5 probably not cured, and 46 not cured. Only 7 of the 19 remained free from symptoms. Von Leube's 556 cases gave a mortality of 2.4 per cent.; cure, 74.1 per cent.; improved, 21.9 per cent., and unimproved 1.6 per cent. Huberman reports recurrence in 20 per cent. of 100 cases cured by ordinary medical treatment, and 8 per cent. of recurrence when the Lenhartz treatment was employed in 135 cases.

The opinion of most writers is that the medical treatment of simple gastric ulcer is attended by the best results, whether the outcome immediate or remote is considered, and the quoted statistics appear to uphold this contention.

THE TREATMENT OF HEMORRHAGE. The subjoined tables are an analysis of the cases which were treated, because life was in peril, specifically for hemorrhage. Our statistics support the observations of those who admit that hemorrhage is best treated medically, but under many circumstances an operation is justifiable. Hemorrhage occurred in 160 of the 1871 cases collected from the literature.

Majority of cases between 20–30, women.		Per cent.
I. 135 acute cases		53.2
77 were treated surgically		57.1
of these cure	41	53.2
death	33	42.8
not given	3	4.0
58 were treated medically		42.9
of these cure	36	62.0
improved	6	10.3
unimproved	0	
death	13	22.4
not given	3	5.3
II. 25 chronic cases		15.7
18 were treated surgically		72.0
of these cure	14	77.6
improved	0	
unimproved	0	
death	4	22.4
7 were treated medically		28.0
of these cure	1	14.3
improved		
unimproved		
death	2	28.5
Result not given	3	42.8

One case treated and died.
Hemorrhage occurred in 23 of the 586 (3.9 per cent.) remote cases.

I. Acute	20	86.9
Surgical cases	7	35.0
of these cure	4	42.8
improved	1	14.3
death	3	42.8
Medical cases	13	65.0
of these cure	10	76.9
improved	0	
unimproved	0	
death	3	23.1
II. Chronic	3	13.1
Medical cures	2	
Surgical cures	1	

The occurrence of hemorrhage in the course of gastric ulcer is placed at figures ranging from 50 per cent. to 80 per cent. of all cases. The figures include those which are small in amount, infrequent or single, and those of very frequent occurrence, multiple, and in which large amounts of blood are lost. Treatment is not necessary in many cases. In the other cases medical measures are resorted to. When life is in peril because of frequent small bleedings or because of one or more large hemorrhages putting life in peril, surgical measures have recently been considered. It is the consensus of opinion that hemorrhage is usually controlled by well-established lines of procedures. Can the few be saved by persistence in medical measures or by resort to surgery? Our statistics uphold the contention that acute large hemorrhage treated by medical means is attended by less mortality than that which is treated by surgical means; the percentage of death after medical treatment is 22.4, and after surgical treatment, 42.8. Of course, the cases have been those in which life was in peril, desperate from the beginning, and perhaps an unfair class for the surgeon. It is presumed that the question with each surgeon was one of operation in the face of death. In the unpublished cases the percentage of hemorrhage, of some types, was small and hence there are only a few upon which to base a calculation. The mortality in the respective divisions is about that given above—medical, 23.1 per cent.; surgical treatment, 42.8 per cent.

The mortality of hemorrhage when medical means are employed is given as follows: Becker, 17.2 per cent.; Brinton, Gerhard, and Welsh, 3.5 per cent.; Diller, 10 per cent.; v. Leube and Ewald, 1.125 per cent.

The remarkable experience of Moynihan stands out as an encouraging feature. This surgeon saved 19 out of 22 patients. Connell, in a paper published in 1905, finds a lessening of mortality, as follows: Marion (1897), 66 per cent.; Hartmann, (1898), 51.6 per cent.; Bidwell (1899), 50 per cent.; Robson (1900), 53.8 per cent. Rodman's analysis showed a mortality of 40 per cent., and Connell, in an analysis of 100 cases, found a reduction of the mortality in 57 acute cases to 26.3 per cent.

Chronic bleeding ulcer, leading to grave anemia, is cured by surgical measures, according to our analysis, more frequently than by medical means. The mortality surgically is 22.4 per cent.; medically, 28.5 per cent. In private practice, the cases are too few for analysis. The mortality of Robson's cases (1900) is 10.5 per cent.; of these analyzed by Rodman (1900), 19.3 per cent., and by Connell (1904), 8.5 per cent.

An analysis of the two classes of cases as to age and sex did not, as the tables show, reveal that either of these states predisposed to success or failure in any line of treatment. Greenough and Joslin *note a mortality of 17 per cent. in males and 1.2 per cent. in females.*

The individual operator stands out. The person of experience tallies higher than the group of operators of small experience. The conclusions seem warranted that the patient is in safer hands by medical treatment, unless he can have the services of a surgeon of large experience. Even then, in acute hemorrhage, unless life is despaired of, the surgeon prefers to postpone operation until the hemorrhage is controlled and the patient relieved of shock and acute anemia.

TREATMENT OF PERFORATION. The treatment of perforation has been discussed very exhaustively during the last ten years. The improved abdominal technique has led to remarkable successes in this field.

INCIDENTS OF PERFORATION (LITERATURE).

Total No. of cases, 1871.
Perforation 536 (28.1 per cent.).

Male	191	Sex
Female	334	
Not given	11	

Age	1–10	3
	10–20	95
	20–30	217
	30–40	90
	40–50	51
	50–60	29
	60–70	10
	Over 70	5
Age not stated		36

Operations for perforation	481
Not operated	55
	536

INTERVAL BETWEEN PERFORATION AND OPERATION.

Number of hours.	1–12	12–24	24–46	36–48	over 48	1 wk.	1–2 w.	2–3 w.	3–4 w.	over 4	Not given, acute. 58	Not given, chronic.
*C	144	73	21	8	3	12	4	1	...	17	32	1
D	38	43	12	17	19	4	0	1	...	4	26	1
	182	116	33	25	22	16	4	2		21	No op.	2
	Acute.					Subacute and chronic.						

* C, cured; D, died; I, improved; U, unimproved.

TREATMENT OF PERFORATION. LITERATURE. 536 CASES. In 481 operations—89 per cent. Cured 65.7 per cent. Died 34.3 per cent. In 55 without operation—Cured, 11 (20 per cent.); died, 30 (54.5 per cent.); not stated, 14. Sex: Male, 191 (35.6 per cent.); female, 334 (62.3 per cent.); not given, 11 (2.1 per cent.).

The majority of perforations occurred in females between the ages of twenty to thirty—201 cases: 142 women; 59 men.

The best percentage of cures was noted when operation was between one to twelve hours after perforation.

In cases of third decade—Cure, 135 (67.1 per cent.); women, 92 (68.1 per cent.); men, 44 (31.9 per cent.). Unimproved, 66 (32.9 per cent.); women, 51 (77.2 per cent.); men, 15 (22.9 per cent.).

In the same decade the medical treatment was as follows: 14 cases—11 women, 3 men; of these—cured 4 (28.5 per cent.), all women. Unimproved, 10 (71.5 per cent.); women, 7 (70 per cent.); men, 3 (30 per cent.).

PERFORATION. *Cases Collected from the Literature.* Period of observation after recovery from operation for perforation during which time patients remained well: one to six months, 93; six to twelve months, 38; one to two years, 13; two to three years, 14; three to four years, 3; four to five years, 3; five to ten years, 5; not stated, 131. Total number of cases of perforation, 536; total number of permanent benefit ranging up to ten years, 300.

Recurrence. After six months, none; after one year, 2; after two years, 1; after three years, none; after four years, 1; after five years, none; not stated, 1. Benefit, but later recurrence, 5.

Unpublished Cases. Number of cases, 16 (2.7 per cent.). Sex: male, 7 (42.7 per cent.); female, 9 (56.3 per cent.). Age: ten to twenty, 1; twenty to thirty, 4; thirty to forty, 6; forty to fifty, 3; fifty to sixty, 1. Time between perforation and operation not stated. Cured, 5 (31.2 per cent.); died, 11 (68.8 per cent.).

Perforation spares neither age nor sex, occurring in about the same degree of frequency that ulcer occurs in each sex and in the respective decades. Apparently it is a slightly more frequent accident in males. Contrary to the experience in hemorrhage, age is an influence which counts for or against special lines of treatment. It would be expected that in the extremes of life the mortality would be higher, with or without operation, than in the middle periods. Sex does not appear to have such influence.

The mortality of perforation as given by four observers is about as follows: With operation: Moynihan, 33.3 per cent.; Hawkins, 43 per cent.; Brunner, 48 per cent.; Garre, 30 per cent. Without operation: Brunner, 95 per cent.

Operation was resorted to in 481 of the 536 cases with a mortality of 34.3 per cent.; cures, 65.7 per cent. 55 cases were not operated on, death taking place in 54.5 per cent. of the cases. 20 per cent. of the 55 were cured and the result not given in the remainder of the percentage. In the unpublished or private cases 31.2 per cent. were cured by operation, and 68.8 per cent. died.

Great interest is attached to the time interval between the accident and the operation. The analysis shows, in consonance with that of others, that the shorter the interval the higher the percentage of cures. Weir and Foote and afterward Keen[10] analyzed reported cases, and Robson and Monihan and Caird presented individual experience. The figures below give the percentage of death:

	Weir and Foote.	Keene.
	Per cent.	Per cent.
Under 12 hours	39.13	19.23
12 to 24 hours	63.63	50.80
24 to 48 hours	77.77	55.55
Over 48 hours	57.51	25.31

	Caird.	Robson and Moynihan.
	Per cent.	Per cent.
Under 12 hours	5 cases, 40	49 cases, 28.5
12 to 24 hours	8 cases, 37.5	35 cases, 63.6
24 to 36 hours	3 cases, 33.3	14 cases, 87.5
36 to 50 hours	2 cases, 50	2 cases, 100.0

Goldsincker, in a summary of 250 articles, finds a mortality of 50 per cent., and in 236 cases 51 per cent. of the persons operated on recovered. Only 46 of the 236 recovered after the twelfth hour. The author calls attention to the occurrence of multiple perforation.

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[10] Cartwright Lectures.

It follows that skill in early recognition is essential to give the patient as well as the surgeon a chance. The medical attendant who recognizes the accident and calls the surgeon early is more deserving of honor than the operator, remarks a distinguished German surgeon.

It is important to note that the operation for perforation is followed by more substantial cures than any other procedure, that is, a permanent cure, hence fewer recurrences follow. French (St. Mary's Hospital) reports 30 cases operated on for perforation, 18 of which were followed many years, and 15 remained perfectly well. Gosh (St. Bartholomew's) notes 69 perforations—34 died—mortality, 49.2 per cent.; 11 operated on and 9 perfectly cured. Patterson's statistics do not fully uphold this view and show the frequency of recurrence after operative procedures in general. 35 patients were operated on for perforation. After fifteen months to two years 18 were perfectly well (16 ulcer closed and 2 closed and gastro-enterostomy). Recurrence took place as follows: 1 died of second perforation twenty-one months later; 2 required gastro-enterostomy; in 9 symptoms of gastric ulcer arose, and 5 had dyspepsia.

If our statistics are upheld it would seem that an operation which destroys the ulcer, as excision, would be ideal. This is the contention of Rydygier, who advocates resection. He lost 2 cases after gastro-enterostomy from perforation and two from hemorrhage and suggests that these complications are not infrequent. Professor Dock, in his Yale address, advocates a similar method of operation, and Bell of Minneapolis is also insistent upon this method, while Rodman earnestly urged excision of the ulcer-bearing area.

THE SEQUELS. In the treatment of the sequels or complications of gastric ulcer the surgeon has equal domain with the physician. The following statistics will show how prominent a surgical affection it becomes, and how necessary it is to employ operative procedures. They show that it is not for gastric ulcer most operations are performed, but for the results of ulceration.

That the sequels of gastric ulcer which cause retention demand surgical treatment our statistics uphold, notwithstanding the opposition of weighty authority. This, however, must be said, the presence, and operation for the relief, of such sequels do not remove the patient from the category of medical supervision. It is as important to continue dietetic, hygienic, and medical means as formerly. Indeed, we must be willing to admit that all surgical procedures must be looked upon as those of necessity.

Cases from the Literature. Number of sequels, 766 (40.0 per cent.). Retention from stenosis, 504 (65.7 per cent.); adhesions, 156 (20.3 per cent.); hour-glass, 81 (10.5 per cent.); dilatation, 13 (1.7 per cent.); pylorospasm, 17 (0.91 per cent.); cause not stated, 55 (0.65 per cent.).

Duration of Symptoms of Sequels:

	Adhesion.	Stenosis.	Dilatation.	Pylorospasm.	Hour-glass.
1–6 months	4	24	0	2	1
6–12 months	13	46	0	0	8
1–5 years	44	92	4	2	19
5–10 years	46	127	5	1	22
10–15 years	20	52	2	1	12
15–20 years	14	43	0	1	9
Over 20 years	9	21	1	0	5
Not stated	6	99	1	0	5

This table shows the duration of symptoms prior to operation. The records in which the maximum number of sequels occurred is given below: Adhesions: Greatest number (43) between ages of 30 to 40 years. More females than males. Stenosis: Greatest number (118) between 30 to 40; more males than females. Hour-glass: Greatest number (22) between 40 to 50; more females than males. Pylorospasm: Three between 40 to 50, all females, and two between 50 to 60, all males. Dilatation: Three between 20 to 30, were females; and three between 40 to 50 were males.

All admit that ulcer is a disease of early life. The above statistics show, as we would expect, that the sequels are of late life. The duration of the symptoms, 5 to 10 years, upholds this. If the ulcer was diagnosticated early and treated properly, the late sequels would be avoided.

THE RESULT OF THE TREATMENT OF SEQUELS (CASES FROM LITERATURE).

	Medical.				*Surgical.*					
	Cured	Improved	Unimproved	Died	Cured	Improved	Unimproved	Died	Recurrence	Result not given
Stenosis	0	2	0	4	340	13	8	42	9	18
Adhesions	0	1	0	0	127	4	2	16	5	1
Hour-glass	0	0	2	0	61	3	0	12	3	..
Dilatation	2	0	0	0	7	3	0	1	..	..
Pylorospasm	0	0	0	0	6	0	0	1	..	2

DILATATION—13. (1.7 per cent.)

			Per cent.
Surgical	Cured	7	53.0
	Improved	3	23.0
	Unimproved	0	
	Death	1	7.7
Medical	Cured	2	

PYLOROSPASM—7. (0.91 per cent.)

Cured	6	85.7
Death	1	14.3

STENOSIS—504. (65.7 per cent.)

Surgical	Cured	340	67.3
	Improved	13	2.5
	Unimproved	8	1.5
	Death	42	8.3
	Not given	86	17.0
Medical	Improved	2	
	Death	4	

ADHESIONS—156. (20.3 per cent.)

			Per cent.
Surgical	Cured	127	81.4
	Improved	4	2.5
	Unimproved	2	1.2
	Death	16	10.2
	Not given	1	
	Recurrent	5	3.2
Medical	Improved	1	

HOUR-GLASS—81. (10.5 per cent.)

Surgical	Cured	61	75.3
	Improved	3	3.7
	Unimproved	0	
	Death	12	14.8
	Recurrence	3	3.7
Medical	Unimproved	2	

PERIOD UNDER OBSERVATION AFTER CURE. PATIENTS REMAINING WELL.

	Stenosis.		Adhesions.		Hour-glass.		Dilatation.		Pylorospasm.	
Time.	Surg.	Med.	Surg.	Med.	Surg.	Med.	Surg.	Med.	Surg.	Med.
1–6 months	70	2	31	1	12	..	3	1	2	..
6–12 months	59	..	23	..	17	..	3	..	..	..
1–2 years	69	..	15	..	4	..	1	..	2	..
2–3 years	20	..	5	..	4	..	..	..	..	..
3–4 years	13	..	4	..	5	..	..	..	..	..
4–5 years	6	..	1	..	1	..	..	..	..	..
Over 5 years	9	..	1	..	2	..	..	..	..	..
Not stated	106	..	51	..	19	..	3	1	..	..

The sequels, it is well seen, when they produce symptoms that are intolerant or perilous, are surgical affections. The nature of the lesion admits of no other conclusion.

The sequels in unpublished cases number 353. The lesions were not clearly defined or were confused in 53 which are not available for analysis. The greatest number were of 1 to 5 years' duration. All occurred late in life. The summary shows the decade in which the lesions were most frequent.

Adhesions. Largest number (13) between 30 to 40 years. More females than males.

Stenosis. Largest number between 30 to 40 years. More males than females.

Hour-glass. Largest number (4) between 30 to 40 years. All females.

Pylorospasm. Largest number (5) between 20 to 30 years. Seven males; six females.

Dilatation. Largest number of cases, equally divided between 20 to 30 and 30 to 40 years, nine males.

DURATIONS OF SYMPTOMS OF SEQUELS (UNPUBLISHED CASES).

	Adhesions	Stenosis	Dilatation	Pylorospasm	Hour-glass
1–6 months	5	8	18	8	..
6–12 months	8	31	15	7	..
1–5 years	23	77	34	21	4
5–10 years	10	47	18	3	1
10–15 years	2	8	2	2	1
15–20 years	1	5	2	..	1
Over 20 years	..	4	..	..	..
Not stated	2	2	6	4	1

RESULT OF TREATMENT OF SEQUELS (UNPUBLISHED CASES).

	Medical				*Surgical*					Result
	C	I	U	D	C	I	U	D	Recur.	not given.
Stenosis	2	4	2	0	131	5	2	18	7S* 7M*	1 Med.
Adhesions	0	1	1	0	40	2	2	6	4S*	1 Med.
Hour-glass	0	0	0	0	6	0	0	1	1	
Dilatation	49	25	0	0	20	2	4	4	1S*	3
Pylorospasm	25	6	1	0	9	4	1	1	1S* 1M*	

* S, surgical treatment; M, medical treatment.

PERIOD OF OBSERVATION AFTER TREATMENT OF CASES THAT WERE CURED, DURING WHICH TIME NO RECURRENCE.

	Stenosis.		Adhesions.		Hour-glass.		Dilatation.		Pylorospasm.	
	S*	M*	S*	M*	S*	M*	S*	M*	S*	M*
1–6 months	17	2	7	..	1	..	1	16	2	6
6–12 months	11	..	4	..	..	..	3	8	4	4
1–2 years	12	..	4	..	..	..	2	4	..	4
2–3 years	10	1	5	..	..	..	2	13	1	8
3–4 years	5	1	3	..	..	..	..	2	..	..
4–5 years	5	..	2	..	..	..	..	..	1	3
Over 5 years	3	..	0	..	..	..	1	1	..	4
Time not stated	76	2	17	1	5	..	13	19	5	2

* S, surgical treatment; M, medical treatment.

The difference between the cases published and those unpublished is notable in the greater number due to dilatation and to adhesions in the latter. This is due to greater care in giving the cause of stenosis. The surgical treatment of stenosis is attended by a high mortality, but it is presumed the cases were of very grave type and death would have resulted had not interference been permitted. In dilatation the mortality was higher with surgical than with medical treatment. Both forms of treatment were followed by the same percentage of cures. As with the published cases the age and sex were not factors determining the result, apart from their influence in all surgical procedures. It is this class of cases, we must agree with Greenough and Joslin, "which indicates the need of surgical intervention in other than emergency cases of the disease."

FREQUENCY AND MORTALITY OF OPERATIONS. The statistics relating to the various operations present interesting features. The first of the group of tables shows the frequency of gastro-enterostomy and the conclusion therefore, of surgeons, that it is the operation to meet most of the difficulties. The percentage of mortality in gastro-enterostomy is much higher than that of individual operators. Mayo Robson has had a mortality of less than 5 per cent., and later, in ulcer, of 1.7 per cent.; Moynihan (1906) of 3.5 per cent.; Mayo of less than 3 per cent. If a number of operators are grouped, as by Joslin, the mortality is 23.8 per cent., a not wide departure from our statistics.

The mortality in private or unpublished cases, 9.1 per cent., approaches that of single operators. The mortality of excision is high and yet compares favorably with that of gastro-enterostomy, for recurrence took place in 58 of 964 cases of gastro-enterostomy, or 6.23 per cent., while after excision recurrence took place in 2 of 35 cases, or 5.74 per cent. 2 of the 9 of Mayo Robson's cases relapsed or recurred and 1 was not traced.

The percentage of death, when all the cases of all operators are grouped together, is higher than that of individual operators of large experience. It is well that this is known, for the surgeon who by design operates once or twice only should know the greater mortality. If any blackness can be given to statistics to deter the surgeon who is rushing in to cure dyspepsia, etc., it is also well.

Nature and Frequency of Operations.

Cases collected from the literature. Total number of operations, 1193.

		Per cent.
Gastro-enterostomy	964	80.80
Pylorectomy	24	2.10
Excision	51	4.20
Pyloroplasty	69	5.20
Cauterization	5	0.41
Dilatation of stricture	4	0.33
Gastrolysis	37	2.20
Suture	38	2.30

Result of Various Operations (Cases Collected from the Literature).

	Gast'ent.	Exc.*	Pyl'rec.	Gas.	Dil.	Caut.	Pylor.	Sut.
C	690	35	21	22	4	3	48	25
I	47	1	1	4	..	..	4	1
U	25	1	..	6	..	..	2	..
D	144	10	2	2	..	2	6	6
R	58	2	..	3	..	..	9	6

* In two cases of excision final result not given.

Percentage of Cure of Various Operations.

		Cured or improved. Per cent.	Unimproved or death. Per cent.
Gastro-enterostomy	964	76.4	23.6
Excision	51	70.6	29.4
Pyloroplasty	69	75.3	24.7
Cauterization	55	60.0	40.0
Dilatation of stricture	4	100.0	....
Gastrolysis	37	70.2	29.8
Suture	38	68.4	31.6
Pylorectomy	24	91.6	8.4

Late Results of Various Operations (Literature).

Permanency of cure in various operations.

	Gastro-enterostomy.				Excision.				Gastrolysis				Pylorectomy.			
	C	I	U	D	C	I	U	D	C	I	U	D	C	I	U	D
6 months	126	9	2	144	10	1	..	10	7	3	6	2	5	1	..	2
6–12 months	103	8	2	..	3	..	..	..	5	..	..	..	3	..	..	..
1–2 years	123	7	4	..	6	..	..	..	3	1	..	..	3	..	..	..
2–3 years	36	3	1	..	2	..	..	..	..	..	..	..	2	..	..	..
3–4 years	26	3	..	..	..	..	..	..	1	..	..	..	..	..	..	..
4–5 years	12	1	..	..	1	..	1	..	1	..	..	..	..	..	..	..
Over 5 years	18	2	..	..	2	..	..	..	..	..	..	..	..	..	..	..
Time not given	246	14	16	..	11	..	..	2	5	..	..	..	8	..	..	..
Recurrence	58	..	..	..	2	..	..	..	3	..	..	..	..	..	..	..

LATE RESULTS OF VARIOUS OPERATIONS (LITERATURE).—(*Continued.*)

Permanency of cure in various operations.

	Suture.				Dilatation.				Cauterization.				Pyloroplasty.			
	C	I	U	D	C	I	U	D	C	I	U	D	C	I	U	D
1–6 months	13	..	..	6	1	..	..	..	..	..	..	2	17	2	2	6
6–12 months	4	..	..	..	..	..	..	..	..	..	..	..	9	..	..	..
1–2 years	2	..	..	..	..	..	..	..	..	..	..	..	8	..	..	..
2–3 years	..	..	..	..	1	..	..	..	..	..	..	..	2	1	..	..
3–4 years	1	..	..	..	1	..	..	..	..	..	..	..	8	..	..	..
1–5 years	..	1	..	..	..	..	..	..	..	..	..	..	1	1	..	..
Over 5 years	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Time not given	5	..	..	..	1	..	..	..	3	..	..	..	5	..	..	..
Recurrence	6	..	..	..	..	..	..	..	..	..	..	..	9	..	..	..

OPERATIONS (UNPUBLISHED CASES).

Operations for simple ulcer, sequels, and complications. Total number of operations, 292.

		Per cent.
Gastro-enterostomy	264	90.4
Excision	7	2.3
Pylorectomy	12	4.1
Cauterization	1	0.3
Dilatation of stricture	0	0.0
Gastrolysis	5	1.6
Suture	0	0.0
Pyloroplasty	3	0.1

RESULT OF VARIOUS OPERATIONS (UNPUBLISHED CASES).

	Gastro-enterostomy.*	Excision.	Pylorectomy.	Gastrolysis.	Dilated.	Cauterize.	Pyloroplasty.†	Suture.
Cured	208	4	8	3	..	1	2	..
Improved	8	..	..	1	..	..	..	..
Unimproved	6	..	..	1	..	..	..	..
Death	24	2	4	..	..	..	1	..
?	1	..	..	..	..	..	..	..
Recurrence	16	1	..	..	..	..	..	..

* In one case of gastro-enterostomy result not given. †Gastroplasty, 1 cured; 1 death.

	Per cent.	Per cent.	Per cent.	Per cent.
Gastro-enterostomy	C. 75.5	I. 3.0	U. 2.2	D. 9.1

Recurrence, and result not given; in remaining cases 10.2 per cent.

	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
Excision	C. 57.1	I.	U.	D. 28.5	R. 14.2
Pylorectomy	C. 65.0	I.	U.	D. 35.0	
Gastrolysis	C. 60.0	I. 20.	U. 20.	D.	
Cauterization	C. one case				
Pyloroplasty	C. 66.6	I.	U.	D. 33.3	

LATE RESULTS OF VARIOUS OPERATIONS (UNPUBLISHED).

Permanency of cure in various operations.

	Gastro-enterostomy.				Excision.				Gastroplasty, 1 cured, 1 death. Gastrolysis.				Pyloroplasty.			
	C	I	U	D	C	I	U	D	C	I	U	D	C	I	U	D
1–6 months	25	1	6	24	1	..	..	2	..	1	1	..	1	..	..	1
6–12 months	20	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..
1–2 years	15	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
2–3 years	13	1	..	..	..	..	..	..	1	..	..	..	1	..	..	..
3–4 years	5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
4–5 years	5	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..
Over 5 years	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Not given	108	5	..	..	2	..	..	..	1	..	..	..	..	..	..	..
Recovered	16	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..
Recurrence not given	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

In the remaining operations the data were not sufficient to make any calculations.

CONCLUSIONS. Gastric ulcer is a medical disease.

Gastric ulcer with complications and sequels is sometimes a surgical disease; if perforation occurs it becomes a surgical affection at once; if hemorrhage occurs acutely, it is rarely a surgical affection; if repeated and chronic, it is a surgical affection.

If the ulcer is productive of perversion of secretory function alone, it remains a medical affection. Inasmuch as hyperchlorhydria is in part a neurosis, the scretory function can be balanced chiefly by medical, dietetic, and hygienic measures. Even if pyloric spasm attends the hypersecretion and hyperacidity it does not necessarily take the case beyond medical care. It is wrong to submit such patients to operation, unless motor disturbances become prominent.

If the symptoms and physical signs of retention from obstruction, dilatation, hour-glass contraction, or adhesions supervene and persist, the case is surgical.

If the symptoms of gastric ulcer become continuous in spite of medical treatment and incapacitate or threaten life, and if hemorrhage recurs and secondary anemia arises, it is a surgical disease. Such cases, however, are always attended by organic sequels.

The extraordinary frequency of chronic gastric ulcer with sequels requiring operation is due to neglect of the treatment of an ulcer in its incipiency. Statistics show that most patients are operated on between the thirtieth and fortieth year and have an ulcer history of five or ten years' duration.

What, as a medical attendant, should one do with a case of gastric ulcer? From personal experience and a study of recorded cases I would say, if it is simple uncomplicated ulcer, employ rest, at first absolute and later modified, a suitable diet, and the drugs indicated, for at least four months. If attended by an organic complication, as pyloric obstruction from thickening or from adhesions, or by dilatation, if extreme, or by hour-glass contraction, surgical measures are in order.

If perforation exists there should be no delay in operating.

If hemorrhage exists operation is rarely necessary, and if acute, not unless the peril of hemorrhage outweighs that of operation—a nice estimation of values. If hemorrhage is persistent and gives rise to anemia, operation is indicated. Under any circumstances and until cure is established keep the patient in touch with a surgeon. The physician should never assume the attitude of a distinguished physician who congratulated himself that he did not ask a surgeon to see a case because it had features like those of pancreatitis, a suspicion borne out by the autopsy which showed such lesion. It should be the duty of the physician to associate with himself a surgeon, to the end that accidents may be taken care of at once, and organic sequels relieved.

The final very serious duty is the selection of the surgeon. One who has good technical ability and has had considerable experience in gastric surgery should be selected. The operation even of gastroenterostomy is not trivial and requires the best service at command.

After the surgical procedures of necessity are carried out the patient must be treated medically. Medical treatment must be continued over a period of four months at least; hygienic and dietetic treatment over a period of years.

A patient who has had gastric ulcer should, for all time, observe the hygienic and dietetic rules which keep digestion to an approxmately normal state, which prevent anemia, and which, above all, so conserves the nervous system as to prevent neurosis.

THE INDICATIONS FOR, THE METHODS OF, AND THE RESULTS TO BE EXPECTED FROM, THE MEDICAL TREATMENT OF GASTRIC ULCER.[1]

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To assemble the evidence that recent experience makes possible in the medical treatment of peptic ulcer and the secondary results of this disease, and to point out what advance has been made, is the first task set us—a part of the subject that will be dealt with by my distinguished colleague, Professor Musser. To decide, in view of all the facts, the most judicious course to pursue, without attempting to press overmuch the importance of any particular method of treatment, is the second task, and to that I devote this paper.

Were we to permit ourselves to take a brief in championing some method with the zeal that success in a comparatively small group of cases sometimes suggests, we should undoubtedly fail in complying with the intention of the makers of this program. Above all things, it appears important at this juncture not to array against each other the comparative advantages of medical and surgical practices. Rather there should be made the deliberate effort so to view the matter that we may concur in deciding upon our place in the treatment of this disease.

We should exclude from consideration those ulcerative processes dependent upon special infections, like syphilis, tuberculosis, and pyemia, except when there can be shown to be a definite relationship between these and peptic ulcer.

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[1] An address delivered at the Seventh Triennial Congress of American Physicians and Surgeons, Washington, D. C., May 7, 8, and 9, 1907.